

SECTION 08510 - STEEL WINDOWS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes heavy custom, steel, fire-rated, fixed, windows for new and replacement installations.
- B. Related Sections: The following sections contain requirements that relate to this Section:
 - 1. Joint sealing between windows and adjacent materials is specified in Division 7 Section "Joint Sealers."
 - 2. Glazing requirements, including windows specified to be factory glazed, are specified in Division 8 Section "Glass and Glazing."
 - 3. Field painting of factory prime coated windows is specified in Division 9 Section "Painting."

1.3 SYSTEM PERFORMANCE REQUIREMENTS

- A. General: Provide steel window units that comply with performance requirements specified.
- B. Crack Tolerances: Before leaving the factory, test each type and size of required window units with ventilators closed and locked, for compliance with the tolerances specified by the Steel Window Institute (SWI).

1.4 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of the Contract and Division 1 Specification Sections.
 - 1. Product data for each type of window are required, including:
 - a. Construction details and fabrication methods.
 - b. Profiles and dimensions of individual components.
 - c. Data on accessories and finishes.
 - d. Weight per foot (meter) of each steel section.
 - e. Recommendations for maintenance and cleaning of surfaces.
 - 2. Shop drawings for each type of window are required. Include information not fully detailed in manufacturer's standard product data and the following:
 - a. Layout and installation details, including anchors.
 - b. Elevations of continuous work at **1/4 inch = 1 foot (1:50)** scale and typical window unit elevations at **3/4 inch = 1 foot (1:20)** scale.
 - c. Full-size section details of typical composite members, including reinforcement.
 - d. Glazing details.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer who has completed installation of steel window units similar in design and extent to those required for the project and whose work has resulted in construction with a record of successful in-service performance.
- B. Standards: Comply with applicable recommended specifications of the Steel Window Institute except to the extent more stringent requirements are indicated.
- C. Single Source Responsibility: Provide steel windows produced by a single manufacturer capable of showing prior production of units similar to those required.

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- D. Design Concept: The drawings indicate the size, profiles and dimensional requirements of the steel window types required and are based on the specific types and models indicated. Steel window units by other manufacturers may be considered provided deviations from dimensions and profiles indicated are minor and do not change the design concept as judged by the Government. The burden of proof of equality is on the proposer.
 - E. Fire Resistance: Where windows are indicated to be "Fire Resistant" provide units complying with NFPA 80, Class E. Comply with governing regulations.
 - 1. Provide units bearing the Underwriters Laboratories label.

1.6 PROJECT CONDITIONS

- A. Field Measurements: Check actual window openings by accurate field measurement before fabrication. Show recorded measurements on shop drawings. Coordinate fabrication schedule with construction progress to avoid delay of the work.

1.7 SEQUENCING AND SCHEDULING

- A. Scheduling: Except where steel window units have been pre-glazed before installation, complete field painting of window units before installation of glass.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the work include, but are not limited to:
 - 1. William Bayley Company.
 - 2. Custom Window.

3. Hope's Architectural Products, Inc.
4. D.V. Fyre-Tec, Inc.

2.2 MATERIALS

- A. Steel Window Members: Provide frame members formed from hot-rolled new billet steel sections. Size and weight of principal frame members shall conform to the following:
 1. Heavy Custom Windows: Combined weight of frame members shall not be less than 4.2 lb per lineal ft. (6.3 kg per linear m). Front to back depth of frame section shall not be less than 1-1/2 inches (38 mm).
- B. Fasteners: Provide bronze, brass, stainless steel or other metal fasteners warranted by the manufacturer to be non-corrosive and compatible with steel window members, trim, anchors and other components.
- C. Anchors, Clips and Window Accessories: Provide units of stainless steel, hot-dip zinc coated steel or iron complying with ASTM A 123, or bronze/brass. Provide units with sufficient strength to withstand design pressure indicated.
- D. Sealant: For sealants required within fabricated window units, provide type recommended by the manufacturer for joint size and movement. Sealant shall remain permanently elastic, non-shrinking, and non-migrating.
- E. Glass and Glazing Materials: Refer to the "Glass and Glazing" section of these specifications.

2.3 FABRICATION

- A. General: Fabrication steel window units to comply with indicated standards. Include a complete system for assembly of components and anchorage of window units.
- B. Provide mullions and cover plates formed of hot-rolled or cold-rolled steel matching window units, complete with anchors for support to structure and for

installation of window units. Provide mullions of profile indicated. Allow for erection tolerances and provide for movement of window units due to thermal expansion and building deflections, in the manner indicated.

- C. Glazing Stops: Provide screw-applied or snap-on glazing stops coordinated with glass selection and glazing system as indicated. Finish glazing stops to match window units, if fabricated of steel; otherwise provide the manufacturer's standard finish as selected.
- D. Glazing Clips: Where face glazing (without stops) is indicated, furnish glazing clips for concealment in glazing compound.
- E. Pre-glazed Fabrication: Pre-glaze window units at the factory where possible and practical for applications indicated. Comply with glass and glazing requirements of the "Glass and Glazing" sections of these specifications.

2.4 FINISHES

- A. General: Comply with NAAMM "Metal Finishes Manual" for recommendations relative to application and designations of finishes.
- B. Surface Preparation: Before fabrication clean surfaces of dirt, oil, grease, and other contaminants followed by a zinc-phosphate pretreatment applied in accordance with the window manufacturer's recommendations.
- C. Shop Prime Coat Finish: After fabrication provide 1.0-mil (0.03 mm) dry film thickness shop prime coat finish consisting of a hot alkali solution cleaning, followed by a rinse and hot-phosphate solution treatment, then a chromic-acid rinse, drying and a special-dip metal primer coating, and oven drying for 30 minutes at 300 degrees F (150 degrees C).

PART 3 - EXECUTION

3.1 INSPECTION

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- A. Inspect openings before beginning installation. Verify that rough or masonry openings are correct and the sill plate is level.
 - 1. Metal surfaces shall be dry, clean, free of grease, oil, dirt, rust and corrosion, and welding slag, and shall be without sharp edges or offsets at joints.

3.2 INSTALLATION

- A. Comply with manufacturer's specifications and recommendations for installation of window units, hardware, operators, and other components of the work.
- B. Set window units plumb, level and true to line, without warp or rack of frames or ventilators. Provide proper support and anchor securely to surrounding construction with approved fasteners.
 - 1. Separate corrodible surfaces from sources of corrosion of electrolytic action at points of contact with other materials, by inserting a bituminous coating or plastic sheet materials.
- C. Set sill members and other members in a bed of compound or with joint fillers or gaskets, as shown, to provide tight construction. Refer to the "Joint Sealer" Section of Division 7 for compounds, fillers, and gaskets to be installed concurrently with window units. Coordinate installation with other components of the work.
 - 1. Repair abraded areas of factory applied finishes.

3.3 ADJUSTING

- A. Adjust operating ventilators and hardware to provide a tight fit at contact points for smooth operation and a tight closure.

3.4 CLEANING

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- A. Clean surfaces promptly after installation of windows. Exercise care to avoid damage to the finish. Remove excess glazing and sealant compounds, dirt, and other substances.
 - B. Clean glass of pre-glazed units promptly after installation of windows. Comply with requirements of the "Glass and Glazing" Section for cleaning and maintenance.

3.5 PROTECTION

- A. Initiate and maintain protection and other precautions required through the remainder of the construction period, to ensure that window units will be free of damage or deterioration at the time of Substantial Completion.

END OF SECTION 08510